**DETAILED ACTION**

Claims 1, 4, 6, 7 and 31 have been amended. Claims 2, 3 and 26-30 have been canceled. Claims 1, 4-25, 31 and 32 are pending and under consideration.

It is re-stated that the disclosure of the prior-filed application, Application No. 60/420,554, fails to provide adequate support or enablement in the manner provided by the first paragraph of 35 U.S.C. 112 for one or more claims of this application. Acknowledgement is made of applicants claim to provisional applications 60/436,941, filed December 30, 2002 and 60/420,554, filed October 23, 2002. Upon review of said applications, it was noted that the '554 application discloses only two MBM proteins, that of CDC7L1 and PRKACG. The remainder of the instant MBM proteins are disclosed in the '941 application. Thus, the '554 application does not support the genus of MBM polypeptides encompassed by the instant claims 1-30. The '554 application also fails to adequately describe a genus of MBM proteins encompassed by claim31 as well. Accordingly the instant claims are extended benefit of an earlier effective filing date only to December30, 2002.

Claims 1, 4-25, 31 and 32 remain objected to for reciting non-elected species beyond that of MAPK4.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The rejection of claim 1 under 35 U.S.C. 102(b) as being anticipated by Peng et al (Journal of Neurochemistry, 1996, Vol. 66, pp. 1191-1197) is maintained for reasons of record.

Claim 1 is drawn in part to a method comprising the steps of providing an assay system comprising n MBM polypeptide or nucleic acid, contacting the assay system with a test agent under conditions whereby but for the presence of the test agent the system provides a reference activity and detecting a test-agent biased activity of the assay system, comparing the difference

between the test-agent-biased activity and the reference activity to determine whether the test agent is a candidate branching morphogenesis modulating agent, and wherein the MBM polypeptide s MAPK4.

Peng et al disclose a method of modulating the activity of MAPK4 using as assay system comprising MAPK4 (ERK4), wherein the modulator is nerve growth factor (page 1192, first column, lines 8-14) or EGF (page 1193, second column, under the heading "EGF as well as NGF promotes tyrosine phosphorylation of ERK4"). Thus, the test-agent biased activity is tyrosine phosphorylation in response to the nerve growth factor/EGF. Peng et al compare the phosphorylation of ERK4 in the presence of NGF, EGF, insulin, cAMP and "control" which is without an agent, and therefore fulfills the specific limitation of "comparing a difference". Further, the recitation of "to determine whether the test agent is a candidate branching morphogenesis modulating agent" is a step of abstract reasoning and therefore has no patentable weight when comparing the claims to the prior art.

It is noted that the recitation of a "method for identifying a candidate branching morphogenesis modulating agent" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See In re Hirao, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and Kropa v. Robie, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

It is further noted that the phrase "wherein a difference between the test agent-biased activity and the reference activity identifies the test agent as a candidate branching morphogenesis modulating agent" is not given patentable weight when comparing the claims to the prior art as it simply expresses the intended result of a process step positively recited, see MPEP 2111.04.

Given that the method of the prior art comprises the same method steps as claimed in the instant invention, the claimed method is anticipated because the method will inherently be a method for identifying a candidate branching morphogenesis modulating agent See Ex parte Novitski 26 USPQ 1389 (BPAI 1993).

Applicant argues that the disclosure of Peng et al lacks the affirmation step of determining whether the test agent is a candidate branching morphogenesis modulating agent. This has been considered but not found persuasive. The recitation of "to determine whether the test agent is a candidate branching morphogenesis modulating agent" in claim 1(d) is a step of abstract reasoning and therefore has no patentable weight when comparing the claims to the prior art.

The rejection of claims 1 and 5 under 35 U.S.C. 102(b) as being anticipated by Petersen et al (Cell, 2000, vol. 103, pp. 1111-1120) is maintained for reasons of record..

Claim 5 embodies the method of claim 1 wherein the assay system includes an expression assay comprising a MBM nucleic acid and the candidate test agent is a nucleic acid modulator.

Petersen et al disclose an assay wherein MAPK4 in Arabidopsis is transposon inactivated, and the resulting transposon tagged mutant was subjected to a RNA blot and cDNA microarray hybridization (page 1112, first column, second full paragraph, and Figure 1 C for the expression assay comprising the MBM nucleic acid (visible under the wild-type).
Given that the method of the prior art comprises the same method steps as claimed in the instant invention, the claimed method is anticipated because the method will inherently be a method for identifying a candidate branching morphogenesis modulating agent See Ex parte Novitski 26 USPQ 1389 (BPAI 1993)

The rejection of claim 1 under 35 U.S.C. 102(b) as being anticipated by Takeishi et al (Journal of Molecular Cell Biology, 2001, Vol.33, pp. 1637-1648) as evidenced by Gonzales et al (FEBS Lett, 1992, Vol. 304, pp. 170-178) is maintained for reasons of record..

Takeishi et al disclose an in vitro kinase assay (page 1646, figure 7B and 7D) wherein isolate heart muscle is subjected to mechanical stretching in the presence or absence of chelerythrine. Gonzales et al disclose that p63MAPK (which is synonymous with MAPK4) is expressed in heart muscle (page 177, Figure 5C). Thus, the assay system of Takeishi et al includes MAPK4. The exposure to chelerythrine fulfills the specific embodiment of a modulator.

Given that the method of the prior art comprises the same method steps as claimed in the instant invention, the claimed method is anticipated because the method will inherently be a method for identifying a candidate branching morphogenesis modulating agent See Ex parte Novitski 26 USPQ 1389 (BPAI 1993)

The rejection of claim 1 under 35 U.S.C. 102(b) as being anticipated by Lee et al (Molecular and Cellular Biology, 1999, Vol. 19, pp. 1973-1980), as evidenced by Gonzales et al (FEBS Lett, 1992, Vol. 304, pp. 170-178) is maintained for reasons of record.

Lee et al disclose an assay system comprising contacting H661 cells, which are a non-small cell lung cancer cells (page 1974, under the heading of Cell lines and culture conditions) with retinoic acid and serum and measuring GST-Jun, phosphorylated Jun, JNK and cJUN as a test-agent biased activity (page 1975, Figure 1). Retinoid acid fulfills the specific embodiments of a modulator. Gonzales et al disclose that p63MAPK (which is synonymous with MAPK4) is expressed in lung tissue (page 177, Figure 5C). Thus, the assay system of Lee et al includes MAPK4.

Given that the method of the prior art comprises the same method steps as claimed in the instant invention, the claimed method is anticipated because the method will inherently be a method for identifying a candidate branching morphogenesis modulating agent See Ex parte Novitski 26 USPQ 1389 (BPAI 1993)

The rejection of claims 31 and 32 under 35 U.S.C. 102(b) as being anticipated by the abstract of Whelan et al (Molecular Biology of the Cell, 2000, Vol. 11, supplement, page 456a) is maintained for reasons of record..

Claims 31 and 32 are drawn to a method comprising obtaining a biological sample from a patient, contacting the sample with a probe for MBM expression, comparing the results to a control and determining whether step (c) indicated a likelihood of disease, wherein the presence of a disease can be diagnosed, and wherein the probe specifically binds MAPK4.

The abstract of Whelan discloses a method wherein western Blot was used to determine the level of ERK-4 (MAPK4) in primary breast tissue which meets the limitations of obtaining a biological sample from a patient and contacting the sample with a probe for BM expression

because the labeled band in the Western blot would be indicative of a probe for MAPK4. The abstract of Whelan et al fulfills the embodiment of comparing the results with a control because the results were compared with the level of ERK-4 expression in adjacent breast tissue.

It is noted that the recitation of a "method for diagnosing a disease in a patient" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See In re Hirao, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and Kropa v. Robie, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

It is further noted that the phrases "comparing results from step (b) with a control" and "determining whether step (c) indicates a likelihood of disease, wherein the presence of a disease can be diagnosed" are not given patentable weigh as said phrase indicate only abstract thought rather than an active method step.

Given that the method of the prior art comprises the same method steps as claimed in the instant invention, the claimed method is anticipated because the method will inherently be a method for diagnosing disease in a patient, or diagnosing cancer in a patient See Ex parte Novitski 26 USPQ 1389 (BPAI 1993).

Applicant argues that it is irrelevant that any individual step or limitation of such a process by itself would be unpatentable under 101, citing In re Bilski, 545 F.3d 943,88 USPQ2d 1385. This has been considered but not found persuasive. It is particularly noted that the allegation above has been taken out of context. The full disclosure with respect to 101 is as follows:

*Whether process of claim that recites fundamental principle is novel or nonobvious is irrelevant to determination of whether claim is drawn to patent-eligible subject matter under 35 U.S.C. §101, and it is inappropriate to determine patent eligibility of such claim as whole based on whether selected limitations constitute patent-eligible subject matter.*

Further it is stated

*Correct test for whether process claim is drawn to patent-eligible subject matter under 35 U.S.C. §101 is not whether claim recites sufficient "physical steps," but whether claim meets "machine-or-transformation" test; thus, claim that recites physical steps, but neither recites particular machine or apparatus, nor transforms particular article into different state or thing, is not drawn to patentable subject matter, whereas claim that purportedly lacks any physical steps, but is still tied to machine or achieves eligible transformation, satisfies requirements of Section 101.*

The instant claims have not been rejected as failing the limitations required by 35 U.S.C. §101, therefore applicants argument is moot.

Applicant argues that claim 31 has be re-written to repeat the limitation of diagnosing a disease in a patient and therefore the rejection has been overcome. this has been considered, but not found persuasive. The determination of a disease diagnosis is in the realm of abstract reasoning and therefore cannot be given patentable weight when comparing the claim to the prior art.

Claims 1, 5, 31 and 32 are rejected.

Claims 1, 4-25, 31 and 32 remain objected to for reciting non-elected species beyond that of MAPK4.

All other rejections, as set forth in the prior Office action are withdrawn in light of applicant's amendments.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen A. Canella whose telephone number is (571)272-0828. The examiner can normally be reached on 10-6:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Helms can be reached on (571)272-0832. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Karen A Canella/
Primary Examiner, Art Unit 1643